

1. A system for processing signals in a well, comprising:  
a data source disposed in the well for acquiring data;  
a component disposed in the well;  
a wireless electronic transmitter disposed in the well and connected to the data source for receiving signals from the data source and transmitting corresponding signals through the component; and  
a receiver disposed in the well for receiving the corresponding signals from the transmitter after transmission through the component.
2. The system of claim 1 wherein the data acquired by the data source relate to the condition or function of the component.
3. The system of claim 2 wherein the component is a packer and the data acquired by the data source relate to fluid leakage across the packer.
4. The system of claim 1 further comprising an electrical conductor connected to the receiver for passing the corresponding signals from the receiver uphole or downhole.
5. The system of claim 1 wherein the corresponding signals are transmitted via electromagnetic waves.
6. The system of claim 1 wherein the corresponding signals are transmitted acoustically.
7. The system of claim 1 wherein the transmitter and/or receiver are mounted on, or adjacent to, the component.
8. The system of claim 1 wherein the transmitter and/or receiver are embedded in the component.

9. A method for processing signals in a well, comprising the steps of:  
acquiring data in the well;  
transmitting signals corresponding to the data through a component disposed in the well;  
receiving the corresponding signals after transmission through the component;  
and  
conducting the corresponding signals from the receiver.
10. The method of claim 9 wherein the acquired data relate to the condition or function of the component.
11. The method of claim 10 wherein the component is a packer and the data acquired by the data source relate to fluid leakage across the packer.
12. The method of claim 9 wherein the signals corresponding to the data are transmitted via electromagnetic waves.
13. The method of claim 9 wherein the signals corresponding to the data are transmitted acoustically.

14. A system for processing signals in a well, comprising:  
means disposed in the well for acquiring data;  
a component disposed in the well;  
transmitter means for receiving signals from the means for acquiring data and transmitting corresponding signals through the component; and  
receiver means disposed in the well for receiving the corresponding signals after transmission through the component.
15. The system of claim 14 wherein the data relate to the condition or function of the component.
16. The system of claim 15 wherein the component is a packer and the data relate to fluid leakage across the packer.
17. The system of claim 14 further comprising means connected to the receiver means for passing the corresponding signals from the receiver means uphole or downhole.
18. The system of claim 14 wherein the data are transmitted via electromagnetic waves.
19. The system of claim 14 wherein the data are transmitted acoustically.
20. The system of claim 14 wherein the transmitter means and/or the receiver means are mounted on, or adjacent to, the component.
21. The system of claim 14 wherein the transmitter means and/or the receiver means are embedded in the component.